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STUDIES ON THE MANGROVES OF PENINSULAR INDIA VERSUS THE ANDAMAN AND NICOBAR ISLANDS

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INTRODUCTION

Mangroves constitute a distinct type of vegetation, characterised by the habitat factors and distinct floristic elements. The species are mostly gregarious in character but the number of floristic elements is considerably low as compared with those found in other types of vegetation. In recent times the ecology and management of mangroves has assumed greater significance in terms of fisheries. Further, mangroves play an important role in the conservation of coastal soil and prevention of sea-erosion. The author who conducted a series of botanical tours and expeditions in the Andaman and Nicobar Islands for the last two decades has made a close and detailed study of the mangrove vegetation of these bay islands. A comparative study of the vegetation and floristic elements of the Mangroves of Peninsular India with those of the Andaman and Nicobar Islands is therefore presented in this paper. The present study is confined to the East (Orissa, Andhra Pradesh and Tamil Nadu) and West (Maharashtra, Goa, Kerala) coasts of Peninsular India with those found in the Andaman and Nicobar Islands.

AREA AND LOCATION

India has a total of 3,60,000 hectares of mangrove vegetation of which more than three-fourth occurs in the Sunderbans, West Bengal and the Andaman and Nicobar Islands. In Peninsular India mangroves occupy an area of 38,000 hectares, constituting roughly 10% of total formations, while in the Andaman and Nicobar Islands, they cover an area of 10,000 hectares, amounting roughly to 3% of the total formations.

Mangroves along the east coast of Peninsular India are found in Dharma and Mahanadi river estuaries of Orissa, Godavari and Krishna river estuaries of Andhra Pradesh, and Cauvery delta of Tamil Nadu. In the west coast they are found in Salsette Islands of Maharashtra, Goa and coastal regions of Kerala. The coast line in the Andaman and Nicobar Islands is irregular, deeply indented with numerous tidal creeks, and several well-sheltered bays with excellent mangrove forests. These occur in areas like Austin Strait (North Andaman), Porlobjig, Bomlungta, Charalungta (Middle Andaman), Havelocks and Wrafter's Creek (South Andaman) in the Andaman group of islands. In the Nicobar group of islands they are found in the bays of Katchall, Kamorta and Nancoury Islands (Middle Nicobar), Chengappa Bay (Little Nicobar) and Ganges harbour and mouths of five rivers (Alexandra, Dogmar, Galathea, Amrit Kaur and Jubilee) in the Great Nicobar Island.

FLORISTIC COMPOSITION

It is estimated that in India there are about 55 mangrove species, distributed under 35 genera and 25 families, the more important ones being Acanthaceae, Avicenniaceae, Meliaceae and Rhizophoraceae. The mangrove formations in the mainland have been much affected by human and animalagencies. Its exploitation in an unsystematic and uncontrolled manner has depleted not only good mangrove formations but also many rare species. For instance the graceful *Nypa* palm is rarely seen in the Sunderban forests.

The Mangroves of Peninsular coast are slowly getting degraded due to biotic influence and are being transformed into either secondary forests or halophytic vegetation as compared to the virgin formations in the Andaman and Nicobar Islands. The floristic composition of the mangroves of east and west coast of Peninsular India, and the Andaman and Nicobar Islands are discussed first, followed by comparative studies.

East Coast : The luxuriance and richness in the vegetation and composition of the species are at the maximum in the Mahanadi delta of Orissa and gradually diminish downwards in the south up to the Cauvery delta in Tamil Nadu. The usual tree species, *Rhizophora mucronata* Lamk., *Bruguiera parviflora* (Roxb.) Wight & Arn., *B. cylindrica* (L.) Bl., *Avicennia officinalis* L., *A. marina* Vierh., *Ceriops tagal* (Perr.) Roxb., *C. decandra* (Griff.) Ding Hou, *Kandelia candel* (L.) Druce, *Amoora cucullata* Roxb., *Heretiera fomes* Buch.-Ham., *Xylocarpus granatum* Koenig, *Phoenix paludcsa* Roxb., *Barringtonia racemosa* Roxb. and *Hibiscus tiliaceus* L., are the major components of the mangrove forests in east coast. Associated with them are the shrubby elements such as *Aegiceras corniculatum* (L.) Bl., *Acanthus ilicifolius* L., *Excoecaria agallocha* L., *Cynometra mimosoides* Wall. ex Benth., *Lumnitzera racemosa* Willd., *Sonneratia apetala* Buch.-Ham. and *S. griffithii* Kurz. Climbers such as *Derris trifoliata* Lour., *Dalbergia spinosa* Roxb., *Caesalpinia crista* L. etc., intertwine over the trees and shrubs.

The herbaceous elements are limited to *Aegialitis rotundifolia* Roxb., *Aeluropus lagopoides* (L.) Trin. ex Thw., *Myriostachya wightiana* Hook. f. and *Porterisia coarctata* (Roxb.) Tateoka. *Acrostichum aureum* L., is the only mangrove fern here.

West Coast : The mangroves of West coast (Maharashtra, Goa, Kerala) are poorly developed in comparison with the east coast, except in Kathiawar and Saurashtra which are excluded from our purview. In Bombay (Salsette Islands) *Avicennia* formations (*A. officinalis* L.) and thickets of *Acanthus ilicifolius* L., are the principal mangrove elements. *Rhizophora* populations in the west coast are limited and scattered. The other commonly occurring species are *Barringtonia racemosa* Roxb., *Hibiscus tiliaceus* L., *Lumnitzera racemosa* Willd. and *Excoecaria agallocha* L. *Cynometra mimosoides* Wall. ex Benth., found in the Karnataka coast does not extend upwards. *Phoenix paludosa* Roxb., is almost absent.

Andaman and Nicobar Islands : The mangroves of the islands are of the gregarious type. The most important and dominant species are *Rhizophora mucronata* Lamk., *Bruguiera gymnorrhiza* (L.) Lamk. and *Ceriops tagal* (Perr.) Roxb., which occur in large populations along extensive areas in the tidal creeks. The *Bruguiera* forest with its tangled knee-roots is at times impenetrable. *Avicennia marina* Vierh., with its characteristic pneumatophores and *Heretiera littoralis* Dryand., are common in the tidal zone. The graceful *Nypa* palm (*Nypa fruticans* Wurmb) is another prominent species here.

Associated with the above are *Xylocarpus granatum* Koenig, *Barringtonia racemosa* (L.) Roxb., *B. speciosa* Forst., *Hibiscus tiliaceus* L., *Aegiceras corniculatum* (L.) Bl., *Excoecaria agallocha* L., *Brownlowia lanceolata* Benth., *Cerbera manghas* L., *Scyphiphora hydrophyllaceae* Gaertn., *Sonneratia caseolaris* (L.) Engl., *Xiemenia americana* Willd., *Guettarda speciosa* L., *Hernandia ovigera* Bl., *Messer-*

schimidia argentea (L. f.) Johnst., *Baccaurea sapida* Muell. and *Timonius jambosella* Thw. *Acanthis ilicifolius* L. and *A. ebracteatus* Vahl form dence thickets in swampy back-waters. *Acrostichum aureum* L., is the only mangrove fern growing along with *Acanthus* populations. The common climbers are *Derris trifoliata* Lour., *Sarcolobus globosus* Wall., *Finlaysonia maritima* (Bl.) Baker. Among the few ephiphytic orchids are *Ceratostylis subulata* Bl., *Eria bractescens* Lindl. and *Trichoglottis cirrhifera* T. & B. A few herbaceous species such as *Mariscus pennatus* Don., *Thuraea involuta* (Forst.) R. Br. grow in the forest floor.

COMPARATIVE STUDIES

The gregarious *Nypa* palm which is a characteristic species in the mangrove flora of the Andaman and Nicobar Islands is absent in Peninsular India. Further, *Bruguiera gymnorrhiza* (L.) Lamk., *B. parviflora* Wight & Arn., *Ceriops tagal* (Perr.) Roxb., *Xylocarpus granatum* Koenig and *Lumnitzera littorea* (Jack.) Voigt, which are very common in the bay islands are rare along the Peninsular coast. *Kandelia candel* (L.) Druce, found in the Peninsular coast does not occur in the Andaman and Nicobar Islands. *Guettarda speciosa* L., *Acanthus volubilis* Wall. and *Hernandia ovigera* L., common in the Andaman and Nicobar Islands are again absent in Peninsular India. Many species of Chenopodiaceae, common in the Peninsular coast are entirely absent in the Andaman and Nicobar Islands. Similarly herbaceous species such as *Aeluropus lagopodies* (L.) Trin. ex Thw., *Porterisia coarctata* (Roxb.) Tateoka, characteristic of Peninsular Indian mangroves are almost absent in the Andaman and Nicobar Islands.

In general, the mangrove vegetation of the bay islands, is dense, luxuriant, and unaffected by biotic factors as compared to the poor rapidly degrading formations of the same in Peninsular India.

PHYTOGEOGRAPHY

Majority of the mangrove genera of the two areas under discussion such as *Bruguiera*, *Ceriops*, *Kandelia*, *Lumnitzera*, *Sonneratia*, *Scyphiphora*, *Aegilitis* and *Nypa* are essentially Old World, namely Indo-Malayan and part of Pacific islands east of Samoa. None of the above is reported so far from the New World. Genera such as *Rhizophora*, *Xylocarpus* and *Avicennia* are cosmopolitan, occurring both in the Old and the New World (Chapman, 1974).

Acanthus ilicifolius Wall., *Aeluropus lagopoides* (L.) Trin., are tropical salt-land plants. Studies on the coastal mangroves of Orissa (Banerjee and Rao, unpublished) have revealed the occurrence of *Rhizophora stylosa* Griff. and *Sonneratia griffithii* Kurz which are purely Malesian and Burmese in character.

ECONOMIC POTENTIALITIES

The *Nypa* palm is of great economic importance as a source of alcohol. In the Philippines alcohol is extracted from this palm (Gibbs, 1911). The Juice, flowing from the cut-ends of the inflorescence stalks is fermented and distilled. It is estimated that the yield per palm is about 40-45 litres. The fermented juice is also used as a beverage in the Philippines. Vinegar can also be manufactured by fermentation. Nypa-alcohol manufacture is a major industry in the Philippines. The abundant *Nypa* palm in the Andaman and Nicobar Islands can also form the basis of the alcohol industry.

The straight trunk of *Bruguiera gymnorrhiza* Lamk. can be used for electric poles.

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REFERENCES

CHAMPION, H. G. AND S. K. SETH. *A Revised Survey of the Forest Types of India*. Manager of Publications, Delhi. 1968.

GIBBS, H. D. The alcohol industry of the Philippine Islands. *Philipp. Journ. Sci.* 6 (Sect. A) : 99-145. 1911.